

555, 268

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
18 November 2004 (18.11.2004)

PCT

(10) International Publication Number
WO 2004/100472 A1

(51) International Patent Classification⁷: H04L 25/02, 27/26

(74) Common Representative: KONINKLIJKE PHILIPS ELECTRONICS N.V.; c/o van der Veer, Johannis, L., Prof. Holstlaan, 6, NL-5656AA Eindhoven (NL).

(21) International Application Number: PCT/IB2004/050555

(22) International Filing Date: 29 April 2004 (29.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 03128689.5 6 May 2003 (06.05.2003) CN

(71) Applicant (for all designated States except US): KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventors; and

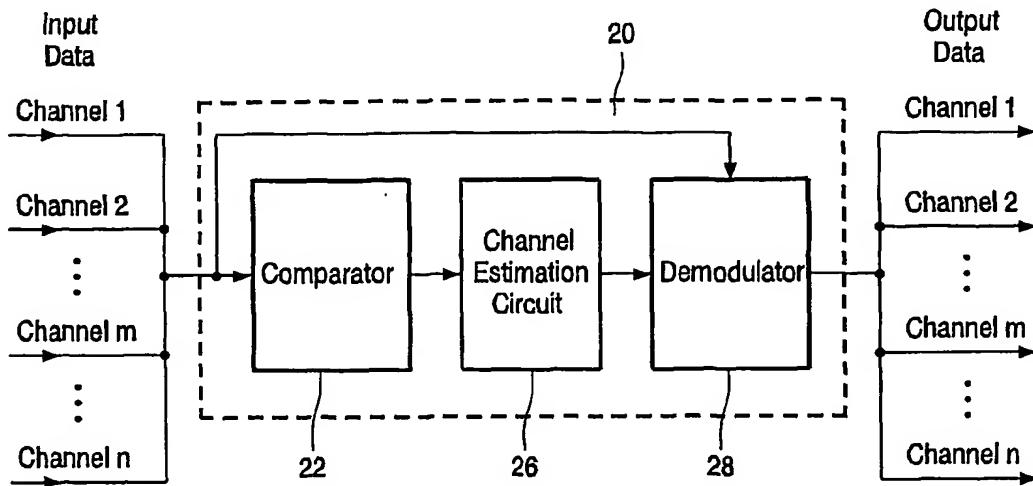
(75) Inventors/Applicants (for US only): ZHANG, Xuejun [CN/CN]; Philips Electronics China, 21/F Kerry Office Building 218 Tian Mu, Xi Road, Shanghai 200070 (CN). LI, Yueheng [CN/CN]; Philips Electronics China, 21/F Kerry Office Building 218 Tian Mu, Xi Road, SHANGHAI 200070 (CN).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: CHANNEL ESTIMATION FOR A CDMA SYSTEM USING PILOT SYMBOLS



WO 2004/100472 A1

(57) Abstract: The present invention provides a CDMA based communication system with improved channel estimation capability with respect to multiple pilots transmitted via channels dedicated to the system. In one embodiment of the invention, a CDMA based communication system compares the received multiple pilots to one another and selects a pilot with the largest power level. The channel estimation is performed based on the pilot with the largest power level to derive the associated channel parameters. The information intended for the system is then demodulated, based on the associated channel parameters, to retrieve user data. In another embodiment of the invention, a CDMA based communication system first performs channel estimation on each of the dedicated channels, via each of which a pilot is received by the system, to derive channel parameters associated with each channel. Then all the channel parameters are combined to derive final channel parameters. The information intended for the system is demodulated, based on the final channel parameters, to retrieve user data. In this way, more precise channel parameters can be obtained.

**Declaration under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE,*

IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.